(No Model.)

2 Sheets—Sheet 1.

A. J. WILLSON.

HORSE RAKE.

No. 245,685. Patented Aug. 16, 1881.

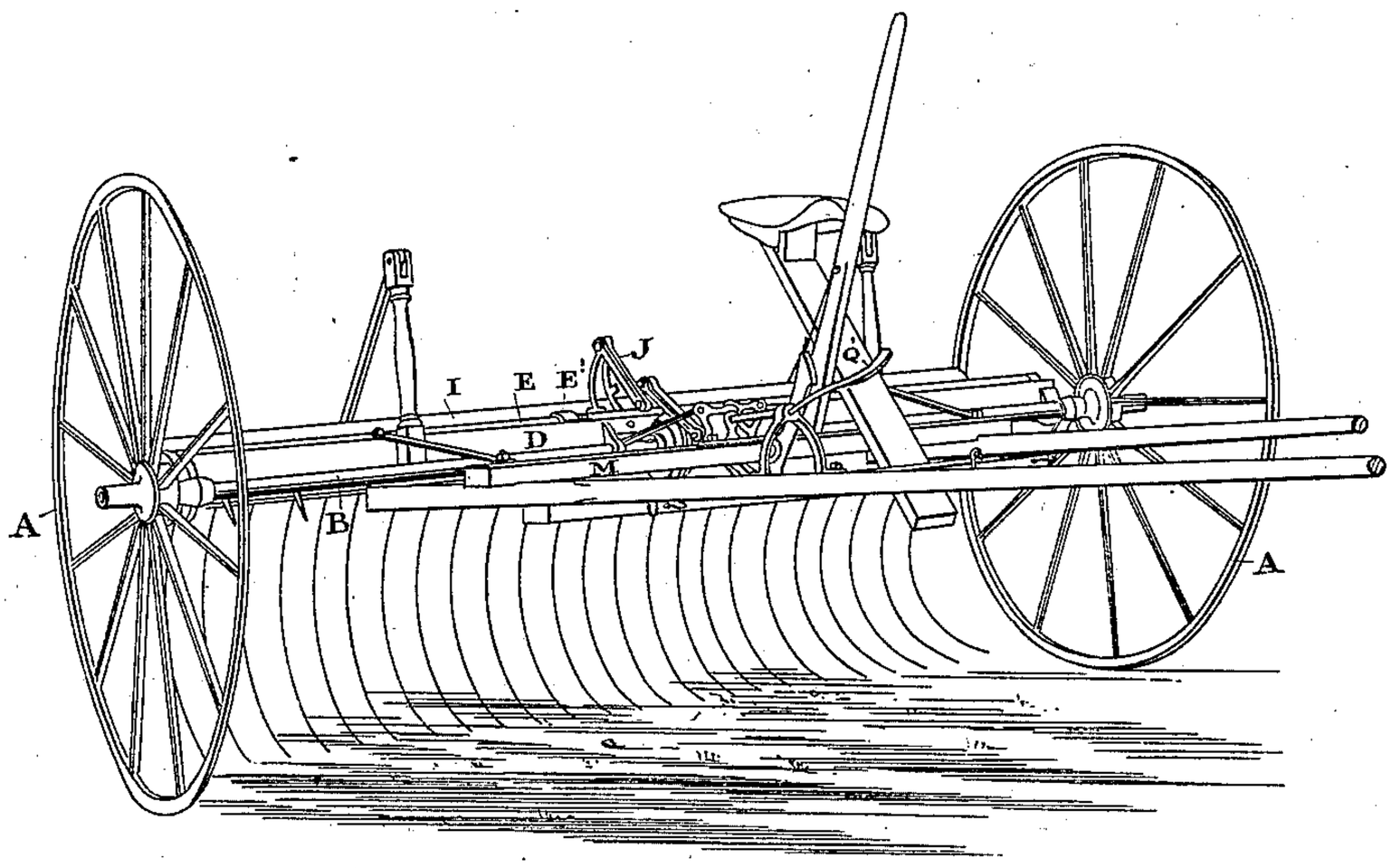

Fig. 1.

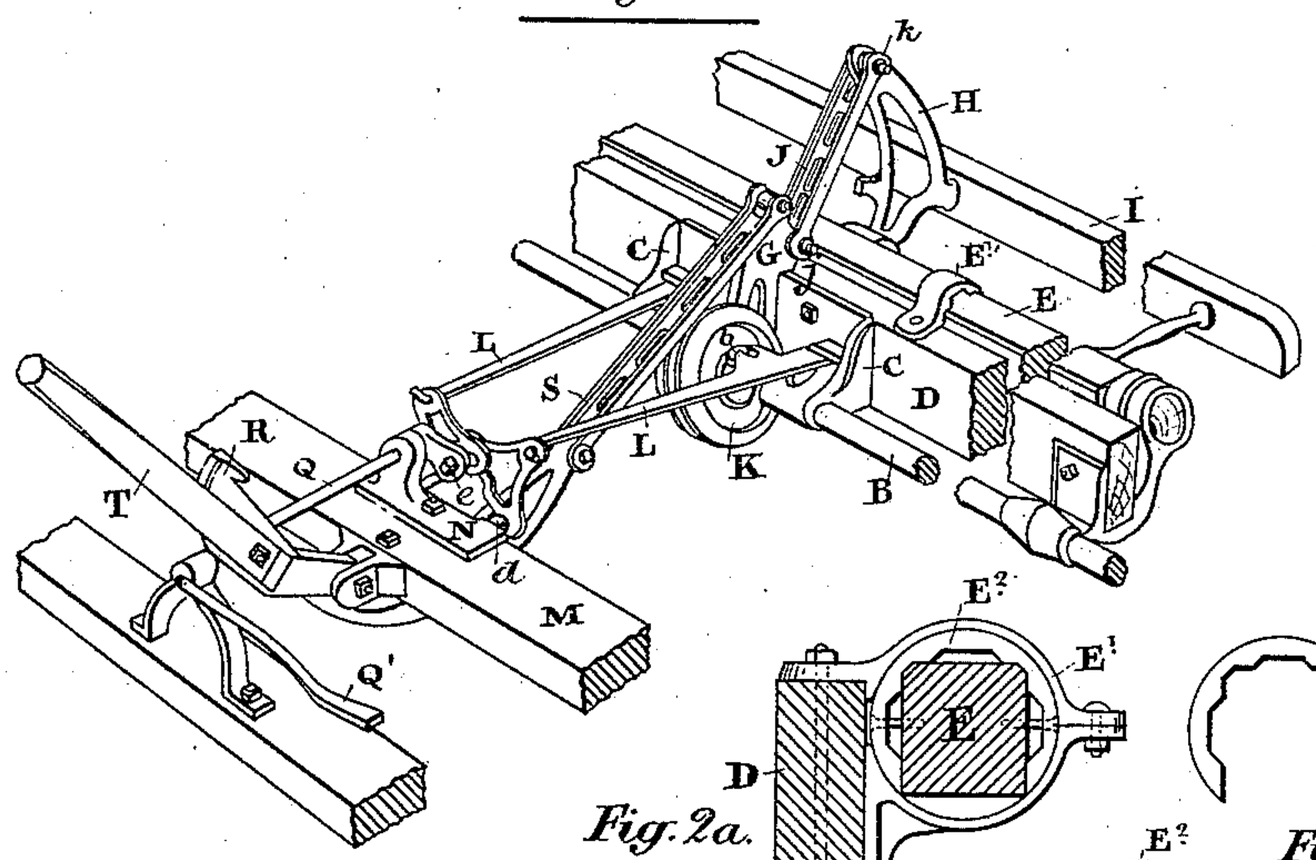

Fig. 2.

Fig. 2a.

Fig. 2b.

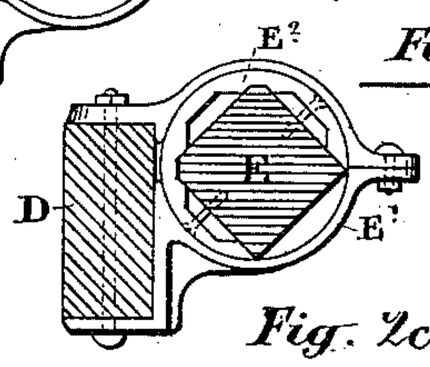

Fig. 2c.

Witnesses.

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Attys

(No Model.)

2 Sheets—Sheet 2.

A. J. WILLSON.

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Fig. 4.

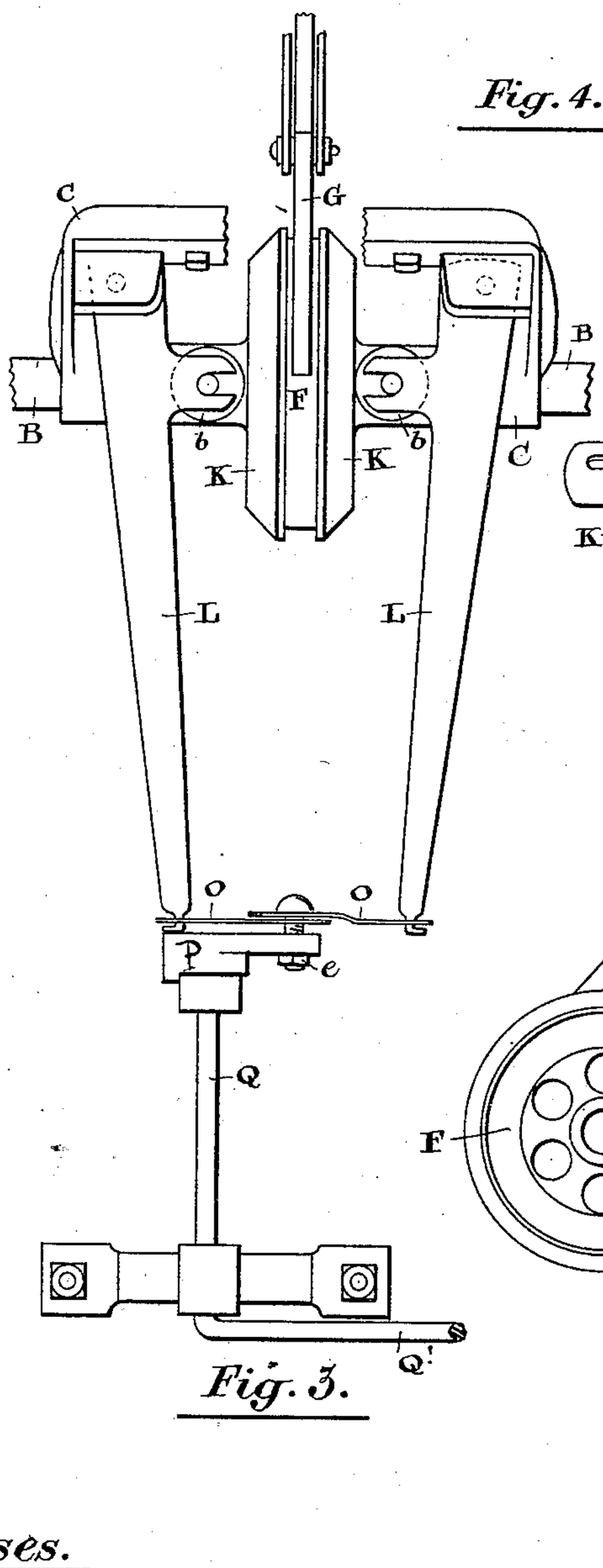

Fig. 3.

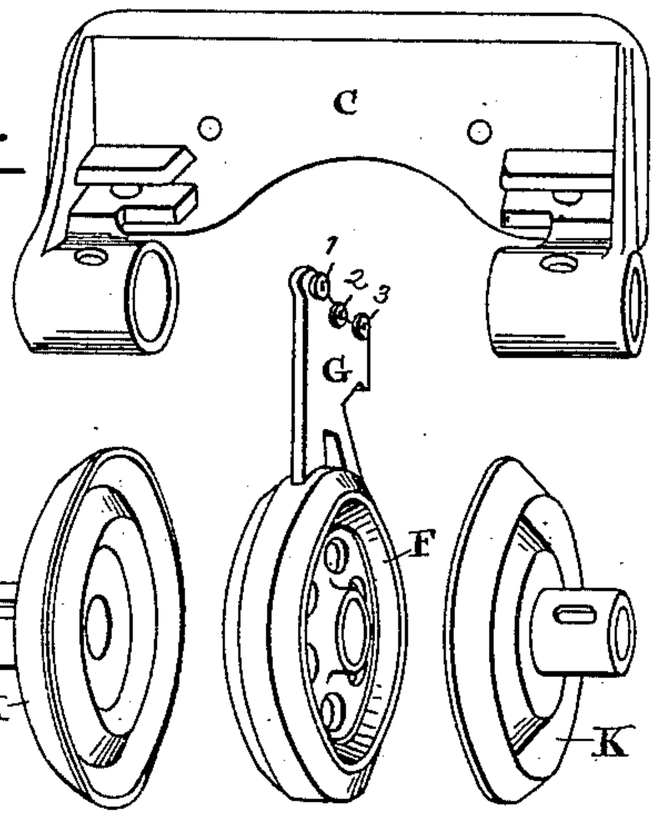

Fig. 5.

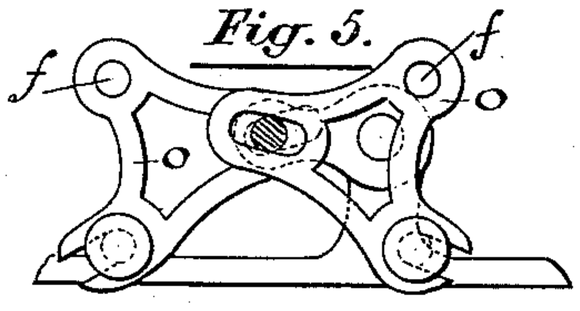

Fig. 6.

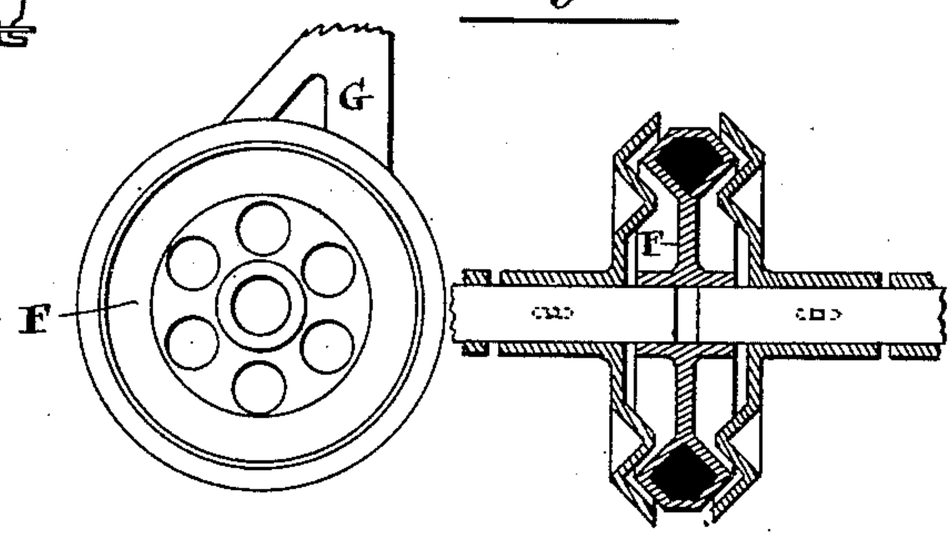

Fig. 7.

Witnesses.

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UNITED STATES PATENT OFFICE.

ALBERT J. WILLSON, OF TORONTO, ASSIGNOR OF ONE-HALF TO JOHN WATSON, OF AYR, ONTARIO, CANADA.

HORSE-RAKE.

SPECIFICATION forming part of Letters Patent No. 245,685, dated August 16, 1881.

Application filed April 30, 1881. (No model.)

To all whom it may concern:

Be it known that I, ALBERT JACOB WILLSON, of the city of Toronto, in the county of York, in the Province of Ontario, Canada, machinist, have invented new and useful Improvements in Horse-Rakes, of which the following is a specification.

The object of the invention is to provide an easily-operated and effective friction-dump; and it consists in utilizing the movement of the main axle through the means of peculiarly-arranged friction-disks, operated as hereinafter more particularly explained.

Figure 1 is a perspective view of a horse-rake constructed in accordance with my invention. Fig. 2 is an enlarged perspective view, showing the arrangement of the dumping mechanism I employ. Figs. 2^a, 2^b, 2^c are detail views of the bearings of the tooth-bar. Fig. 3 is an enlarged detail, showing the arrangement of the friction-disks and lever for operating the same. Fig. 4 is a detail of the bracket for supporting the inside ends of the main axle and attachments connected therewith. Fig. 5 represents details of the friction-disks. Fig. 6 is a detail of the triangular plates for operating simultaneously the two levers used to adjust the friction-disks. Fig. 7 shows a side view and section of the friction-disks.

In the drawings like letters indicate corresponding parts in each figure.

A are the ground-wheels, keyed or otherwise secured to the axle B. This axle is divided in the center, the inner ends being supported in suitable journals in the bracket C. This bracket is bolted to the cross-beam D, upon the opposite side of which is pivoted the tooth-bar E.

F is a two-faced friction-disk journaled on the ends of the axle B, and provided with an arm, G, having three holes, 1, 2, and 3, in its end, as will be seen in Fig. 5.

H is a bracket bolted to the tooth-bar and to the pressure-bar I, which it assists in supporting.

J is a bar forming a connection between the bracket H and the arm G. When the pin *j*, connecting the bar J to the arm G, is passed through the hole marked 2 when the rake-teeth are down, the pins or pivots *k* and *j* both lie in a straight line with the axle, thereby forming a rigid toggle-joint, which, till broken, will hold the rake-teeth down, preventing the rake being dumped by the strain caused by raking heavy grain.

K are two friction-disks placed on the axle B, one on each side of the friction-disk F, the axle B passing through all three friction-disks, as shown. In order to secure the friction-disks K to the axle B so that they will constantly revolve therewith, but may at the same time be adjusted endwise, I pass a pin through the sleeve of each disk K and through the axle which supports it, making a slot either in the sleeve of the disk or in the axle, as will be clearly seen on reference to Fig. 7.

L L are two levers, the end of each being pivoted upon a pin in the bracket C, extending from there to a pin near the cross-bar M.

b is a friction-roller journaled on the levers L opposite to the friction-disks K. By drawing these two levers L together the friction-rollers B, acting against the friction-disks K, force these latter disks against the two-faced disks F, which action, assuming the axle B is revolving, imparts a rolling movement to the disk F, and through it to the tooth-bar E, as described, thereby dumping the rake as desired.

A bracket, N, is bolted to the cross-bar M, with projecting lugs *d*, which constitute supports for the triangular plates O. One angle of each of these plates rests on the lugs *d*, the lower angle being provided with a slot, through which the bolt *e* passes, to connect the two plates to the crank P, which is keyed or otherwise fastened to the bar Q, having a foot-lever, Q′, on it, as shown. The levers L hook into holes *f f* in the upper angles of the plates O. These plates, owing to the connection described, are caused by a movement of the foot-lever O′ to rock upon their supporting-lugs *d*, causing both levers L to move together simultaneously, and in this way bring the two friction-disks K against the central friction-disk, F, and in this manner impart the rolling movement required to dump the rake, as described.

In order to allow the rake to be dumped by hand when the bar J is secured to the arm G by the pin *j* passing through the middle hole of arm G, I pivot to the cross-bar M a foot-lever, R, and connect it to the arm G by the bar S,

as is clearly shown in Fig. 2; and, furthermore, I provide a hand-lever, T, which is pivoted on a bracket on the cross-bar M, close to the foot-lever R, but acting independently, except when drawn toward the driver, when it will come in contact with the end *r* of this foot-lever, when, through the movement of this foot-lever, which is connected, as shown, to the tooth-bar, the rake is dumped as desired.

In order to prevent the tooth-bar from sagging under the weight of the rake-teeth it carries, I provide a central bearing or bearings, E′, bolted to the cross-bar D, and so constructed that it permits the square tooth-bar to roll within it. In explanation of this bearing I show it in detail, Figs. 2^a, 2^c representing a cross-section of the cross-bar D and tooth-bar E at the point where the bracket E′ is located. Fig. 2^b represents the bearing-ring E^2, which is made the shape shown, so that its inside will gripe the square tooth-bar E, while its outside presents a smooth circular surface to fit and revolve within the bracket E′.

What I claim as my invention is—

1. In a horse-rake in which each ground-wheel is secured to an axle working independently of the other, but whose centers are on the same line, a two-faced friction-disk journaled on the ends of the two axles and suitably connected to the rake-bar, in combination with two friction-disks, one on either side of the two-faced disk, and each secured to its respective axle so that they revolve therewith, but may at the same time be adjusted endwise, so as to come in contact with the two-faced disk between them, for the purpose of imparting a rolling movement thereto, substantially as and for the purpose specified.

2. In a horse-rake in which the ground-wheels revolve with their axle, a friction-disk journaled on the said axle and caused to roll therewith by an adjustable friction-connection, and an arm extending from the friction-disk, in combination with a bar or link forming a toggle-joint between the said disk and a bracket on the tooth-bar.

3. In a horse-rake in which each ground-wheel is secured to an axle working independently of the other, but form in connection a support for a two-faced friction-disk connected to the tooth-bar, and on either side of which is situated an adjustable friction-disk, a lever pivoted behind each disk and provided with a friction-roller to prevent the pressure of the lever impeding the rotary movement of the disks when pressing them against the two-faced disk between them, in combination with two rocking plates, one for each lever, and connected together by a bolt passing through oblong holes in the plates, and connecting them to a crank so arranged that its movement will rock both plates simultaneously, thereby moving the levers either toward or from the adjustable friction-disks, for the purpose of bringing them against the two-faced disk between them or releasing them therefrom, as required.

4. In a horse-rake having a stationary cross-bar with brackets at either end to carry the rolling tooth-bar, the combination of a centrally-located bracket or brackets, E′, provided with a bearing-ring, E^2, substantially as and for the purpose specified.

ALBERT JACOB WILLSON.

Witnesses:
JAS. S. BLACK,
E. H. READ.